High-throughput Protein Production Screening Technology.

Abstract

This is a high-throughput protein expression screening method to examine protein production in a cell-free environment. This method is useful for proteomics and structural genomics efforts, which require large numbers or large quantities of protein. The method is flexible and rapid and can be easily automated. Starting with a set of cDNA clones or a library (or genomic-DNA for prokaryotic organisms), protein production analysis can be completed in less than 8 hours by labeling newly synthesized proteins and detecting the label. The technique has been successfully tested on multiple different genes at a time (multiples of 96). It can be readily adapted into other high-throughput formats.

The method has a number of distinct advantages over existing technology. First, the procedure is fast, as it requires no bacterial growth or subcloning. Second, some proteins can be expressed in the RTS but only at low levels in vivo expression systems such as E. coli. The method can be used with non-T7 promotor based clones using a two-step PCR procedure to incorporate the necessary T7 regulatory elements. Third, the system involves no living cells, therefore, has applications in examining proteins from disease-causing microorganisms or bioterrorism agents. Finally, this rapid, simple and automated screening method may also substantially reduce the cost of analyzing protein expression.

Patent:

A US patent application is filed.

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UCRL-MI-124572